Team Agreement

EC463/EC464 - Senior Design

Fall 2019 – Spring 2020

We, the members of team number 21, called IoT Kitchen, have entered into a project titled IoT Kitchen for the customer, Annie Lane, as part of Senior Design Project, ENG EC463/EC464.

The general objective of our project is:

To design and build an IoT enabled cooking assistant that allows users to create and recreate the perfect recipe with ease. The focus of our project is to have user friendly and practical smart devices that help the amateur home chef follow recipes and create their own.

We expect that our major project deliverables will include the following:

1. Scale
    a. Measures weight of ingredients used
    b. Accurate within 1 gram
    c. Able to be tared
    d. Liquid resistant
    e. Utilizes bluetooth to send data
2. Temperature Sensor
    a. Can withstand and measure temperatures from 0°F to 550°F
    b. Food safe
    c. Measures internal temperature of items in the oven
    d. Utilizes bluetooth to send data
3. RFID Cups

    a. Scannable by an android phone
    b. Unique ID for every measuring cup indicating the volume of the cup
4. Android Application
    a. User authentication
    b. Bluetooth connection
    c. Natural Language Understanding Assistant
    d. Food recipe database
5. Natural Language Understanding (NLU) Assistant
    a. Dialogflow for NLU API
    b. Google Firebase Firestore to retrieve recipe data
    c. Actions on Google to deploy functionality to Google Assistant

GENERAL CRITERIA FOR SUCCESS

We understand that evaluation of our work in Senior Design will depend on several factors. First is our team's success at meeting our proposed objectives, as described by our specifications, and providing our deliverables in working fashion, with the required documentation, by the course deadlines. Second is our demonstration of individual proficiency at design and at keeping adequate engineering records of our work. Third is our individual and collective team skill in listening, helping others to reach their goals, and negotiating technical and team problems. Finally, we understand the department policy for reimbursement of expenditures made in executing our project and agree that anything spent about the amount reimbursed by the department will be equally shared among all team members.

INDIVIDUAL LEADERSHIP

We understand that Senior Design teams shall be organized to give each member clear responsibility for one or more design areas. Several people may collaborate on a problem, but only one person should be the designated 'leader' for a design area. Each of us should be the leader of at least one design area so that we can clearly demonstrate our individual proficiency in design and in keeping professional engineering records (in our logbooks).

RESOLVING TEAM CONFLICTS

We understand that we need to work to resolve interpersonal and technical disputes within our team, in a professional and respectful manner. This will sometimes involve compromise, and we agree to be open to reasoned technical arguments about our individual areas and the team's collective efforts. We will seek faculty or mentor help when problems appear serious and are not resolved quickly by our efforts.

NON-PERFORMANCE OF DUTIES BY A TEAM MEMBER

We understand that each of us must pursue our design and team tasks in a professional and timely fashion to ensure our team's success. Should a team member fail to show diligence and concern for the team, a meeting of the team and the course faculty will be held to assess the situation and recommend specific short-term performance goals for the team member, and possibly the whole team. If these goals are not met, the course faculty may decide to remove the offending team member from the team. The student will then have to complete the course reporting directly to the faculty as a team of one. This is a serious step and suggests a significant failure on the part of the individual, and possibly the whole team. It should not be considered except as a last resort.

QUESTIONS

We understand that students and teams are welcome to approach the course faculty about this agreement at any time.

INDIVIDUAL TEAM MEMBER RESPONSIBILITIES

The remaining pages list our team members and our individual 'leader' responsibilities.

TEAM MEMBER ADDENDUM (submit one for each team member):

Team Member Name: **Addison Dolido**

Team Number: 21 Team Name: IoT Kitchen

I have read this entire document, including my teammates' descriptions of their 'leader' roles. I understand the document and agree with the descriptions of roles.

Team Member Signature:

Date: 12/4/19

The following paragraph(s) describes the technical problem(s) for which I hold leader responsibility. (Please give technical details if possible. Broad topical claims will be difficult to assess.)

Hardware lead

I am in charge of overseeing and building all of the hardware components required for this project and making sure that it integrates properly with the software side of the project. This has so far included:

1. Building and designing our scale
    a. Creating the wiring diagram
    b. Soldering the components
    c. Building the temporary wooden housing
2. Setting up the bluetooth and making sure it was working properly
3. Calibrating and testing the scale
4. Writing all of the required Arduino code
5. Integrating the scale with the software side and helping get the app to receive data from the scale via bluetooth.

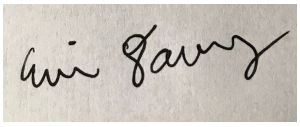
Currently and in the future I will be in charge of designing, building, and integrating the oven temperature sensor and any other desired hardware.

TEAM MEMBER ADDENDUM (submit one for each team member):

Team Member Name: **Erin Dorsey**

Team Number: 21 Team Name: IoT Kitchen

I have read this entire document, including my teammates' descriptions of their 'leader' roles. I understand the document and agree with the descriptions of roles.

Team Member Signature: 

Date: 12/4/19

The following paragraph(s) describes the technical problem(s) for which I hold leader responsibility. (Please give technical details if possible. Broad topical claims will be difficult to assess.)

I hold leader responsibility for all elements of the project relating to Natural Language Understanding (NLU) that allow a user to receive data from and interact with our application via voice commands. The different technical areas that fall under my leadership are listed below.

1. NLU functions built using Google's Dialogflow NLU API
2. Google Firebase Firestore and Dialogflow fulfillment code to retrieve recipe data
3. Google smart home device and Google Assistant set up
4. Deployment of NLU agent to Actions on Google directory for use on Google Assistant and smart home device
5. Integration of NLU functionality directly into Android app using Dialogflow V2 API

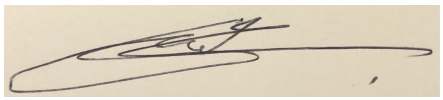
TEAM MEMBER ADDENDUM (submit one for each team member):

Team Member Name: **Saransh Kothari**

Team Number: 21 Team Name: IoT Kitchen

I have read this entire document, including my teammates' descriptions of their 'leader' roles. I understand the document and agree with the descriptions of roles.

Team Member Signature:



Date: 12/4/19

The following paragraph(s) describes the technical problem(s) for which I hold leader responsibility. (Please give technical details if possible. Broad topical claims will be difficult to assess.)

I hold responsibility for constructing an RFID system which will consist of passive RFID tags attached to measuring cups and an android phone that will act as an RFID reader. Additionally, I will be aiding Addison in integrating the RFID system with the software component of this project.

1. Construct RFID tags by combining RFID chips, antennas and substrates
2. Integrating the RFID tags with the relevant measuring cup
3. Ensure that android based smartphones can read the passive RFID tags by utilizing the Near Field Communications (NFC) protocol at a distance of up to half a meter

TEAM MEMBER ADDENDUM (submit one for each team member):

Team Member Name: **Yuran Shi**

Team Number: 21 Team Name: IoT Kitchen

I have read this entire document, including my teammates' descriptions of their 'leader' roles. I understand the document and agree with the descriptions of roles.

Team Member Signature:

Date: 12/4/19

The following paragraph(s) describes the technical problem(s) for which I hold leader responsibility. (Please give technical details if possible. Broad topical claims will be difficult to assess.)

I hold responsibility for elements related to build an android studio program which allows user authentication. I also hold responsibility for building the software that ensure the bluetooth connection with the hardware scale. In the future, I will hold responsibility to help Kenny with the database function.

1. User authentication with firebase
2. Bluetooth connection with the scale
3. Assist the database building process

TEAM MEMBER ADDENDUM (submit one for each team member):

Team Member Name: **Kenny Zheng**

Team Number: 21 Team Name: IoT Kitchen

I have read this entire document, including my teammates' descriptions of their 'leader' roles. I understand the document and agree with the descriptions of roles.

Team Member Signature:

Date: 12/4/19

The following paragraph(s) describes the technical problem(s) for which I hold leader responsibility. (Please give technical details if possible. Broad topical claims will be difficult to assess.)

I hold responsibility for elements relating to the front end of the mobile application including animations, and UX/UI design. I plan on using Sketch and Adobe XD in order to build a user friendly and interactive part of the application. Lastly, I plan on helping Yuran in updating the database for the recipes and Food Recipe APIs.

1. Animation of the mobile application using Sketch for:
    a. Weighting of the items on the scale
    b. Animated temperature sensor
2. UX/UI design to ensure user friendly navigation
    a. Step-by-step cooking instructions
    b. Searching and filtering features
    c. Font/Text for recipes and ingredients
3. TheMealDB API with search functionalities for users to easily navigate
4. Google Firebase SDK for integrating notifications
    a. Updating the recipes for specific user upon logging in